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Implementation of the Metric System, School District 118

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IMPLEMENTATION OF THE METRIC SYSTEM

SCHOOL DISTRICT 118

(TITLE)

BY

Gayle LeCount

B.S. in Math, Purdue University, 1954
M.S. in Ed. Ad., Eastern Illinois University, 1975

THESIS

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF

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I. INTRODUCTION TO THE METRIC FIELD STUDY

In September of 1975, Danville, like all other school districts in Illinois, received instructions that an on-going committee should be established to implement the adoption of the metric system. The committee was to meet all deadlines and guidelines as established by the Illinois Office of Education.

The goal was to establish a comprehensive program for metric education by 1980 for all students who are resident in the district.

It was recommended that each local educational agency designate a person or persons whose duties would include, but not be limited to, the following:

1. Coordination of the metric activities in the instructional programs.
2. Collection and evaluation of text materials and equipment.
3. Planning for local educational agency inservice activities.
4. Researching and revising curricular materials to be utilized in the instructional programs.
5. Inservicing parents and community members.

By January 1976, all districts were to have a person, appointed by the superintendent, to be responsible for metrication. This committee chairperson's activities were to:

1. Describe the method of implementing the metric system into each instructional program.
2. Identify needed curricular modifications and describe the procedure to accomplish same.
3. Identify needed preservice and inservice programs for non-instructional and instructional personnel.

By July 1976, all persons responsible for coordinating metric activities should have been trained via a series of one-day regional workshops. Also all personnel within the district should have been made aware of metric conversion plans in Illinois.

Beginning in fiscal year 1976, the local education agencies would begin introducing the metric system as the primary language of measurements in all phases of curriculum. Regional workshops should be conducted to acquaint certified personnel with metric language.

By September 1978, all other school personnel should have been trained in the use of the metric system.

By 1980 and thereafter, the metric system would become the sole language of measurement in all phases of Illinois education. Metrication in other instructional programs would begin as appropriate and reasonable.

On October 9, 1975, Dr Larry Roth, Assistant Superintendent for Danville School District 118, asked me to accept the chairmanship of the Metric Committee.

This report is organized to show my interpretation of qualifications needed by an administrator in education and my involvement in carrying out the instructions of Dr. Larry Roth.

Because of the personal administrative tasks involved it was selected as a field study.

II. THE QUALIFICATIONS NEEDED BY AN ADMINISTRATOR AND MY ANTICIPATED PROFESSIONAL GROWTH IN THIS AREA

Every effective school administrator must have a special capability for leadership. This would involve knowledge of curriculum and instruction, business, student affairs, and future outlooks. It would call for an individual who is intelligent, confident, moral, sociable, professionally minded, and healthy. This person must be able to plan, initiate, manage, delegate, coordinate, communicate, and evaluate all of the administrative processes which go on about him. The administrator must encourage and enable people to function to accomplish their goals. He must guide staff towards self-improvement through internships, workshops, conventions, school visits, and formal college classes. He must understand the cultural and political outlooks of the community and have a specialized knowledge and competence to serve its needs. He should also recognize occupational interests, availability of education, and community and parent attitudes and values.

The administrator must engage in activities which bring about the greatest worker efficiency and effectiveness consistent with school policies and goals. He must help each person see his role in his true relationship to a specific job while coordinating individuals, jobs, times,

and places. He can help achieve this by illustrating a democratic philosophy which encourages development of the whole individual in an atmosphere of mutual trust.

The administrator should recognize the time for change, whether it be natural or revolutionary, and be adequately prepared to adjust to the change by having insight into goals, organization, changing behaviors and attitudes, democratic processes, experimentation, self-improvement, research, staff morale, and community relations.

The administrator should be an individual who has had an exposure to curriculum at many academic levels and thus understands many of the latest techniques. His concepts should allow for a curriculum that will not only relate to everyday use, but meet individual goals, develop attitudes of learning, and go from one level to another easily.

The greatest qualities of an administrator must be perceiving and behaving in a respectful manner while showing trust in others and concerns for human welfare. He should develop a fully functioning self, one who knows his goals, and one who can appreciate constructive criticism.

As I began the field experience on metric implementation, which is described in the following pages, and as I continue with that assignment, I have felt that it is an important job, and I have accepted it as an opportunity

and challenge to show that I can begin and carry through an effective on-the-job program which will be ongoing.

My major consideration was helping the total District 118 staff while improving my own ability as a leader in the field of administration and supervision. Also this was a chance to identify administrative areas where I might be inadequate through an actual experience where I would learn through application. I was concerned that what was learned would help me initiate new ideas in handling curricular development, personnel, evaluations, and other innovations within our educational system. I wanted to improve basic skills as an administrator so that upcoming projects and activities could be efficiently carried out in a responsible way with individualized attention where possible. I also wanted to keep an open mind for new ideas and methods to bring about meaningful growth experiences for all staff without neglecting existing programs which are proven.

I was interested in being able to handle new situations competently.

III. SETTING UP A COMMITTEE FOR METRIC IMPLEMENTATION

On October 9, 1975, Dr. Larry Roth, Assistant Superintendent for District 118, asked if I would accept the chairmanship of a districtwide metric committee to study and implement movement into the metric system. He explained that the Illinois Office of Education and the Illinois State Board of Education have adopted a policy that states that the international system of units must be adopted as the official instructional system of measurements in all phases of education in Illinois no later than 1980. Dr. Roth also sent a copy of the policy and names of teachers submitted by their building principals who might be acceptable for the committee. We set up a meeting for Monday, October 20, to discuss the committee.

On October 20 we met, and Dr. Roth explained that I was selected because I am the department head for math at Danville High School and he felt I would be best qualified to handle the committee. Committee members were selected, and objectives and reporting dates set up. (See Appendix pages 34, 35, and 36.)

Dr. Roth gave me complete freedom in deciding how the committee would operate. He also gave me the authority to expand the committee as necessary since it was a total district effort.

My instructions were to:

1. Describe the method of implementing the metric system into each instructional program.
2. Identify needed curricular modifications and describe the procedure to accomplish same.
3. Identify needed preservice and inservice programs to insure teacher competencies.
4. Provide inservice for non-instructional personnel.
5. Provide for a metric center.
6. Provide an awareness program for parents.
7. Evaluate and revise curricular materials to insure the inclusion of the metric system.
8. Modify existing curricula to include the metric system as the primary measurement language for secondary schools by 1978.

On Monday, October 27, I again met with Dr. Roth with regards to specific questions on:

1. Exact goals of the committee.
2. Deadlines for reports.
3. Money for substitutes if committee meetings are ever held during the day.
4. Channels of communication.
5. Inservice programs.
6. Avenues for implementation.

Before we were to meet as an entire committee, I decided to meet with each group from the three junior highs and establish one person from each group as a chairperson for that building. This individual would report to me and be responsible for handing out materials and carrying on work within that building. This was also intended to help with communications. Each chairperson was asked to divide the building so each committee member had a specific assigned section. The meetings were held on the following dates:

November 3	South View Junior High
November 4	East Park Junior High
November 5	North Ridge Junior High
November 6	Mr. Roderick, Elementary Principal

All meetings were held after school, and each group was notified that a total committee meeting would be held on Thursday, November 13, in the administration building with Dr. Roth. On November 12, all buildings were called to remind them of the meeting.

On November 13, the committee meeting was held with Dr. Roth. I established and carried out the following:

1. Introduction of Dr. Roth and committee members.
2. Goals of the committee including state deadlines and guidelines.
3. Larry Roderick brought the committee up to date on elementary activities.
4. All building personnel were to be used whenever necessary.
5. Committee members were asked to keep copies of all information sent to me.
6. Building chairpersons were to collect the following information from each department within their building and report to me by November 28. This information included:
 - a. The changes they think will take place within their department when it becomes necessary to convert to metric measurement.
 - b. The present knowledge of staff in each department with regards to metrics.

IV. LOG OF ACTIVITIES FOR METRIC IMPLEMENTATION

On November 18, I attended a metric workshop at Rossville, Illinois, from 4:00 to 6:00 P.M. Dr. Richard Griffiths from Illinois State University described some procedures for teaching metrics. I also obtained and studied the course outline for the Danville Junior College metric course while at the workshop.

On November 19, I sent out a memorandum to each chairperson. It included the following items:

1. Each chairperson should notify their building principal that they are working on the implementation of metrics.
2. Each member read carefully the proposed model for the state plan.
3. Each member read the Illinois Office of Education metric policy statement.
4. The requested report will be due on December 12 rather than November 28.
5. By February 1, 1976, send to me recommended procedures to implement the metric system into District 118.

I will continually meet with each building committee. Total Metric Committee meetings will take place when necessary. If time away from the classroom is needed the chairpersons were asked to let me know. (See Appendix page 37.)

On November 19, Dr. Roth approved the use of substitutes for committee members for at least two half-days during the spring of 1976.

On November 19, personnel at Danville High School and the elementary committee member, Larry Roderick, were informed of expectations and needed information.. (See Appendix pages 38 and 39.)

Since Danville High School is quite large, the committee members were asked to take specific areas of the building.

On Thursday, November 20, I called Dr. Roth to request permission to drive to Rankin (40 miles) to visit with the Superintendent Ron Howard. As a result of that trip I obtained the names of Dr. Tom Edwards and Dr. Robert Cramer from Illinois State University. Both are available to help with metric workshops.

On November 20, I also asked Dr. Roth if anyone in the district has a list of metric materials which are available regardless of subject area and whether or not I had permission to go outside the district and contact industry to see what they have done or what they have available that we might use. He approved the request and gave me Larry Roderick's name as a list of materials source. Larry was contacted but did not have any information beyond that which he had already reported during the Metric Committee meeting on November 13. He did suggest that I contact one of the elementary teachers, but this was to no avail.

On November 21, a Danville High School committee meeting was held to inform John Barker, Esther Elmore, and Lloyd Logan of their assignments. I asked that preliminary information be available to me by December 12, and that each sub-committee should begin looking at procedures to implement the metric policy as indicated by the Illinois Office of Education. These procedures should be available by February 1, 1976.

On November 24, a report was sent to Dr. Roth explaining my trip to Rankin and advising Dr. Roth of the dates when preliminary information would be available. (See Appendix page 40.)

I asked for additional help for:

1. Inservice of non-instructional personnel.
2. Awareness programs for parents.
3. A metric center location.

On November 24, a report was sent to Mr. Mathisen, principal of Danville High School, explaining the Illinois Office of Education position on metrics. Also the Danville High Metric Committee members were identified and reporting dates set up. (See Appendix page 41.)

On November 24, a report was also sent to each department chairperson at Danville High School. (See Appendix page 42.)

On Tuesday, November 25, a meeting of all South View committee members was held at 3:00 P.M. to discuss any questions and point out specifics for the December 12, and February deadlines. Each junior high committee member was given permission for one half-day away from class to work on the metric reports. This day was to be taken at any time before February 1.

On Wednesday, November 26, I met with Lloyd Logan, Industrial Education Coordinator for the District 118 Schools, to discuss what information he might be able to get from industry on metrics. He was asked to report back to me within three weeks. This report did come in but with little help for the schools.

On Thursday, November 27, at 7:30, I met with all Danville High School department heads and the principal and explained the Illinois Office of Education policy on metrics and what I was expecting from the committee members. I asked that each department head advise their departments on the formation of the committee and asked for their help in gathering information.

On December 1, a memo was sent to all secondary staff explaining the necessity for the implementation of metrics and the possibility committee members would contact them. (See Appendix page 43.)

On December 1, I also met with Dr. Roth and explained the procedures I had begun. He gave me some additional information that he had received on metrics and approved my request for substitutes for one-half-day for each committee member if they needed the time.

During the Danville Intern Program on December 1, I talked with Mr. Richard Messenberg from Wisconsin. He gave me the name of Dr. David Dye from St. Paul, Minnesota. Dr. Dye has metric survival kits which can be used for staff workshops. In the workshop which was held on October 27, 1976, some of these kits were used. They did work out well but are too expensive.

On December 1, I received a report from Larry Roderick, elementary Metric Committee member. His report concerned problems the elementary schools have had with metrics. He felt staff education and student application were the major areas where additional help was needed. (See Appendix pages 44 and 45.)

On December 3, I asked Paul Shebby, District 118 Athletic Director, to write to the state for information on anticipated changes in the next few years in sports due to metrics. He acknowledged that he would do so.

On December 4, I sent out a memo to all secondary staff explaining the metric system of units. (See Appendix page 46.)

As of December 5, I felt that teachers were not yet ready for an early spring workshop since most knew very little or nothing about metrics. I thought the best procedure would be to supply information through the spring of 1976 and then have a workshop in the fall. This would give teachers a time to become acquainted with metrics.

I therefore set up the spring objectives:

1. Keep teachers and administrators aware that the metric system was coming.
2. Notify staff of commercial metric use.
3. Supply information on metric notation and its use.
4. Give personnel a chance to use metrics.
5. Encourage staff to accept the new system.

On December 10, Mr. Shebby received a letter with regard to anticipated changes in sports. The letter was from James P. Flynn, Assistant Executive Secretary of IHSA, 2715 McGraw Dr., Bloomington, Illinois 61701. He said that at this time there are no plans to go metric in any sport except track.

On December 11, a memo was sent to all secondary staff including all administrative personnel and secretaries explaining metric conversion. (See Appendix page 47.)

On December 12, I received information from each junior high and the high school with regards to my original request on problem areas when metrics are implemented. This information was condensed and included in a report to Dr. Roth on February 16, 1976. I had also asked Sue Millikin of

East Park to report on feelings about a metric workshop. Her report was sent out on December 5. I received it on December 11. (See Appendix pages 48, 49, and 50.)

On January 7, 1976, I attended a one day seminar, "Managing Metrics," by Diener and Associates Inc., Box 12052, Research Park, North Carolina 27709. The seminar was held at Chicago O'Hare Sheraton. It was set up to help members of a school who are responsible for metrification. Topics included:

1. Metrics SI.
2. Economic necessity.
3. Congressional legislation.
4. International cooperation.
5. Industry.
6. Implementation of metrics.
7. Educational institutions.
8. Critical curriculum areas.
9. Needs assessment.
10. Metric coordinators.
11. Cost.
12. Preparing the student for a metric world.

On January 11, a memo was sent to all secondary staff explaining why metric units are easier to work with than English units. It also pointed out present uses of metrics and dates when treaties and laws were signed that affect metrics in the U.S. (See Appendix page 51.)

On Monday, January 12, a meeting was held with all North Ridge Metric Committee members. The meeting was at Danville High School at 3:00 P.M. Indepth discussion took place on what was expected in the February 1 report.

This was specifically procedures to implement the Illinois Office of Education metric policy into the district. This report date was changed to February 7 due to several conflicting meetings and school functions.

On Tuesday, January 13, I met with Dr. Roth with regards to my objectives for spring and reporting dates to him. He approved all items.

On January 13, a memo was sent to all Metric Committee members explaining the February 7 information needed. It also suggested ways to help staff begin thinking in metrics. (See Appendix page 52.)

On Thursday, January 15, I met with Bernice Courtney from the Commercial News newspaper. We discussed Danville's plans for metrics, and she obtained information which she later printed in the paper. It was essentially a basic understanding of metric notation for the readers.

On January 19, supplies were ordered which could be used during the spring at each building. These included:

- | | | |
|--------------------------|---|-----------------------|
| 1. Empire Metrics | - | bathroom scales |
| Valatie, New York | | thermometer (celsius) |
| | | meter stick |
| | | centimeter rulers |
| 2. Aldridge Folders Inc. | - | 200 English-metric |
| Valley Industrial Park | | converter folders |
| 924 Seville Road | | |
| Wadsworth, Ohio | | |

On January 26, a memo on helpful hints in writing metric notation was sent to all secondary staff including secretaries. It also pointed out that a metric course from Illinois State University would be available in Danville beginning February 16. (See Appendix page 53.)

On Tuesday, February 3, a meeting was held at the administration building with all Metric Committee members present. I gave a list of addresses to the committee and asked each person to write to a specific place for any information available that would be useful in a teacher workshop. It was suggested that the workshop would probably be in the fall but might still be possible in the late spring. Discussion also took place as to what each building and teacher could do to inspire metric awareness. It was decided that April would be set aside as metric awareness month and extra effort would be made to communicate with all staff. They would be encouraged to use handouts, posters, displays, showcases, department workshops, class discussions, and lesson plans on metrics. The committee also discussed summer courses. We decided to meet again on Tuesday, February 24, since most addresses written to would probably have responded by then. A list of the addresses is enclosed in the Appendix with the February 16 report to Dr. Roth.

On Thursday, February 5, a memo was sent to all secondary staff explaining why the United States was going metric. (See Appendix page 54.)

On February 16, a report of all Metric Committee accomplishments to date was sent to Dr. Roth. It also included efforts coming up and preliminary plans for the fall of 1976. (See Appendix pages 55, 56, 57, and 58.)

On February 20, I attended a conference for district metric implementation leaders at Eastern Illinois University. The meeting agenda included:

1. Ideas from here and there on metrics.
2. The development of the metric system.
3. Recommendations for metric implementation.
4. Planning workshops.
5. Consumer education.
6. Learning to estimate in metrics.
7. Metric notation.

On Monday, February 23, I visited with John Eckley of Science Research Associates with regards to any information he might have on metrics. The meeting was at Danville High School at 3:30 P.M. He did have films available and spirit masters.

On February 24, the entire Metric Committee met to go over any information received from letters written. Few letters had returned, and I asked that information be sent to me when it does come in. At the meeting it was decided that a film should be ordered for viewing in March.

On February 25, Dr. Roth sent a memo to me indicating he was pleased with the way I had organized the committee and the progress made. (See Appendix page 59.)

On February 27, the "Metric Report" magazine was ordered for the Danville High School staff. It will be placed in the library.

On March 2, the following supplies were ordered:

1. Four metrication masters from Holt, Rinehart, Winston for each junior high and the high school.
2. A film and spirit master from Science Research Associates and four metric way posters for teacher lounge use.

On March 3, I took off one-half day to look at metric and math materials that several book companies had on display at the Ramada Inn in Champaign.

On March 4, a memo was sent to all staff indicating a clarification on temperature and the spelling of certain words in metrics, such as, meter. It also suggested teachers begin anticipating and preparing for questions students will surely ask about metrics when classes begin in the fall. (See Appendix page 60.)

On March 8-11, I was asked to visit several schools with regards to the teacher-advisor concept being considered for Danville High School. While at each school I took the opportunity to ask questions about each school's metric plans. The following schools were visited:

1. Catholic Central in Lansing, Michigan.
2. Powers Catholic in Flint, Michigan.
3. Rich East in Park Forrest, Illinois.
4. New Trier East in Winnetka, Illinois.
5. Bacon High in Evanston, Illinois.
6. Westmont High in Westmont, Illinois.

Only Rich East and Bacon were beginning metric awareness with their teachers. I wrote to Terrance Hickman at Rich East and Mrs. Pat Keene, Math Supervisor at Evanston. Neither one was at our point in progress with metrics and thus could not help.

On March 12, I asked John Barker, Danville High School committee member, to obtain as many metric posters as possible from the local army recruiter. Eventually he obtained over 200 and almost every teacher now displays one in his room. Also, Esther Elmore wrote to the United States Department of Commerce, National Bureau of Standards, Washington D.C. for any handouts or posters they might have. On March 13, she received a poster on all you need to know about metrics in everyday life. Copies were made of the poster and sent to all staff.

On March 19, individual meetings were set up for each junior high to discuss the remaining spring schedule. Those meeting dates with the junior highs were on March 22, 23, and 24 for East Park, South View, and North Ridge.

At the meetings the following items were gone over:

1. Send to me a list of supplies needed in your building to begin teaching metrics in the fall of 1975.
2. Films will be sent out to be shown to all junior highs and the senior high when they arrive. The films are to be voluntary.
3. Ask teachers if they would have a room display and talk to their classes at least one-half of a class period about metrics during April.
4. Put out the scales, conversion folders, and posters in the teacher's lounge during April. Make up a height and weight measure poster for the wall of the lounge.
5. Meet with each department to answer any questions they have by May 1. Emphasize using metrics next year.
6. Order metric supplies with regular school orders but send the supply list to me. Mark off high cost items and check with me if there are questions.
7. Make up three quizzes, one for each week, which teachers can voluntarily take during late April or early May. Give out answers the following week.

On March 30, 31, and April 1, a twenty minute Science Research Associates film on metrics was shown at each junior high for one day. On April 2, the film was shown at Danville High. All showings were voluntary, but responses were high and sign up sheets had to be used to control the number of teachers and students at any one time.

A metric showcase was prepared at Danville High School on March 29, and remained up until the last of April. One math teacher, Nancy Norem, spent a great deal of time helping with the showcase.

On March 30, the order for metrication masters came in, and a set was sent to each junior high to be used by all classes.

On April 7, a duplicated sheet on household weights and measures was sent out to all staff. The original copy came from the United States Department of Commerce.

On April 12, a report was sent to Dr. Roth on the progress of the Metric Committee. (See Appendix pages 61 and 62.)

On April 20, a notice was sent to all metric chairpersons with regards to a one-half day metric workshop for fall. Members were asked to meet with me at Danville High on Tuesday, April 27, to discuss preliminary plans for the workshop and materials needed.

On April 21, a memo was sent to all secondary staff showing metric units of length, capacity, mass and weight, and volume. (See Appendix page 53.)

On Tuesday, April 27, the Metric Committee chairpersons met and discussed the one-half day workshop for fall. I asked that a list of all supplies needed should be sent to me within two weeks so that I could order the materials. I also asked each person to request the workshop for October 27, 1976. The list of workshop days for the 1976-77 school year had just been received, and this was the first chance to ask the principals for a specific date. On this meeting date, we also discussed and eliminated many of the most costly metric supplies that had been ordered by each school

for the fall of 1976. Most orders had been reasonable, but the school district does not have enough money available for all supplies requested.

On May 3, 6, and 10, metric quizzes were placed in the teacher mail boxes at Danville High School. Responses to these were overwhelming, and many teachers returned the quizzes to me. Answers were given out on each successive quiz. (See Appendix pages 64, 65, and 66.)

On May 17, 1976, I ordered the following supplies for the fall of 1976:

1. Book - The International Metric System and How It Works, by Robert Hopkins.
2. Three wall size metric charts.
3. Ten metric survival kits.
4. Four hundred centimeter paper scales.
5. Ten meter sticks.
6. Six packages of beakers. Each a package of 50.
7. Ten measuring spoon sets.
8. Ten measuring cup sets.
9. Two demonstration centimeter cubes.
10. Ten stacking mass sets.
11. Ten demonstration thermometers.

The order was received on October 12 at a cost of \$342.25.

On May 25, at 3:00 P.M., I had the final school year meeting with Dr. Roth. We discussed the progress of the past year and what would be anticipated in the fall of 1976. He asked that I meet with the District 118 Board of Education on August 18 to update them on the progress of the metric implementation. (See Appendix page 67.)

On August 18, a package of materials was given to each board member along with an oral report on the following:

1. Committee selection.
2. Goals to accomplish.
3. Canvassing for problem areas and allowing for staff input.
4. Metric handouts, posters, computers.
5. April awareness month.
6. What other school districts are doing.
7. Sports.
8. Future goals for 1976-77.

On August 19, Dr. Roth sent out a thank you note on my work with the committee for the past year. (See Appendix . page 58.)

On September 8, I ordered copies of the following films for the October 27 workshop from Doubleday Multimedia, Box 11607, 1371 Reynolds Avenue, Santa Ana, California.

Metrics part I	92060-2	history
Metrics part II	92070-2	volume
Metrics part III	92080-2	mass, temperature

On September 16, a meeting was held to discuss the October 27 workshop. Requests for a workshop on that date were turned down by the principals at South View and North Ridge. East Park and Danville High had confirmed the workshop date with the principals.

On October 1, an order was sent out for 250 booklets on metrics to be distributed in the spring of 1977.

Sue Millikin of East Park resigned from the committee on September 16 because of new responsibilities as a unit

leader for the eighth grade. She was replaced by Jackie Lewis. Mrs. Lewis has taught for many years in the junior highs in mathematics and knows a great deal about metrics.

Meetings were held at Danville High School at 3:00 P.M. on Thursday, October 7, and Thursday, October 21, with the three high school committee members and Jackie Lewis from East Park to finalize plans for the October 27 workshop. It was decided that additional help would be needed and Mrs. Lewis selected two people to help her at East Park. She presented all plans to them at East Park. At Danville High two science department teachers, Mr. Federmeler and Mr. Hayward, and two math department teachers, Miss Norem and Miss Appenheimer, were willing to help with the workshop. All are competent in metrics.

At Danville High School, the workshop was divided into two one hour sessions, one session for the entire staff together and one with six groups of approximately fourteen teachers in each group. Teachers were notified ahead of time which group they were in and where the group would meet. (See Appendix page 69.) The idea was to have the entire staff together for general statements about metrics and then a five minute break with movement to other rooms for hands on activities with metrics. East Park had very similar plans.

At the beginning session I talked to all of the teachers for approximately 20 minutes. My topics concerned:

1. Responses people give to the change to metrics.
2. Major differences between English units and metric units.
3. History of English units and metric units.
4. SI notation and what it means.
5. Why we are changing to metrics.
6. Metric language.

After the lecture a metric quiz was passed out to all staff, and ten minutes was given to answer the true-false and multiple choice questions. A random sampling of this quiz was gathered on a volunteer basis to be compared with a post quiz given at the end of the second session. All other teachers kept the paper to correct as three films were shown. These films included history, length, volume, area, mass, and temperature, and lasted for 35 minutes. This concluded the first session.

At the second session, where groups of approximately fourteen persons met, each group leader had available meter sticks, metric bathroom scales, stacking mass sets, spoon sets in milligrams and milliliters, a metric survival kit, and the following handouts for teachers to keep:

1. A colored metric system chart showing all metric units and their relationship to each other along with comparable English units.
2. A duplicated handout on the meaning of all prefixes and their uses with all metric units.
3. A duplicated handout on the customary and metric units of length, weight, and volume.

4. An educator's guide brochure on teaching metrification furnished by Sears Roebuck and Company.
5. A metric-English pocket converter.
6. A metric centimeter paper tape.

Time was also spent in each group familiarizing teachers with metric instruments and showing how to change from one metric unit to another by moving the decimal point. Teachers also had time to weigh and measure themselves.

At the end of the second session, a five minute quiz was given on metrics. Again a random sampling of 25 copies was collected from volunteers, and a percentage comparison was made with the quiz given at the beginning of the workshop. In the original sample 41% of the items were correct and in the second sample 73% were correct. Of course many factors were involved including the fact that the quizzes were of different length and different people were probably sampled. But we hoped that our original objectives for the workshop had been accomplished. These were to:

1. Make teachers aware of metrics and be less apprehensive of its future use.
2. Give teachers an opportunity for hands on use of metrics.
3. Show how metrics can be easy.
4. Teach the prefixes and movement from one prefix to another.
5. Find body weight and some measures of the body, such as height, so they could compare to other metric and English units later on.
6. Gain a degree of competence in making estimations in metrics.

(See Appendix pages 70, 71, 72, 73, and 74.)

On October 28, I sent a memo to Mr. Mathisen thanking all of the high school personnel who helped with the workshop. (See Appendix page 75.)

On October 28, a phone call was made to Jackie Lewis of East Park with regards to the workshop. She stated that it had gone very well, and I thanked her. Later I wrote a note of thanks to her.

Since that time several members of the teaching staff and of the administration have contacted me in appreciation of the metric workshop. (See Appendix pages 76 and 77.)

V. RECOMMENDATIONS AND SUMMARY

This chapter is divided into four areas. These are the areas of concern which limit the realization of the goals of the program, recommendations for future implementation programs, my future work on metrics, and the summary.

Several areas of concern surfaced which limit the realization of the goals of the project. One of these centered on communications.

Most of the difficulty occurred because people didn't write down needed information on dates, places, and topics. Telephones were difficult to use because the person being called was seldom available to talk. Memos and letters were sometimes misplaced and it required one week on the district pony for a question-response interaction.

Another problem was staff motivation. Personnel, in general, don't take time to acquire new learning until it appears necessary or inevitable that they must. Since metrics have not yet appeared totally on the consumer shelf, many feel it is far away, and thus they take an attitude of not wanting to be bothered. However, the committee, as a whole, accepted the responsibility of presenting metric materials and worked together well. They felt at the end of the year that many fellow teachers were responding well and that most

teachers had saved information handed out. Since all teacher involvement was voluntary, morale was high on the committee.

Educating the non-certified personnel remains a major problem area. There seems to be few ways other than the newspaper to reach these groups within my authority and with money available.

In addition to these, my authority was always a questionable issue in my mind even though Dr. Roth had given me the responsibility to carry on whatever programs I felt necessary, and with whatever personnel I wanted. As a department head I was not in a position to request work from teachers outside my building and department. However, I always tried to be tactful and no major confrontations came about, at least they were not brought to focus. I'm sure there were times when committee members would rather not have done a given assignment, but I always tried to use my influence and always tried to be reasonable. The best example of my infringement on the authority of principals happened when requests for the October 27 workshop were turned down by two principals. Rather than make an issue of this with the principals, I just forgot it.

Finally time to supervise a major implementation program without released time to meet deadlines always seems to mean

neglecting some of the items on the list of priorities. Even when areas were delegated to others, a great deal of time had to be spent outside school hours.

In the future if a program is of any great demand on time, or requires authority beyond what a teacher normally has, then I think a full time administrator should deal with the project. Few teachers have the time, and power to carry on a working relationship with other administrators is difficult to assume by anyone in a teaching position, especially if that person must go outside his own building with requests for help. Many administrators feel an infringement on their domain when requests are made of them by a teacher.

The project chairperson should be known as a leader and have a recognition and working knowledge of interpersonal relations. He should also understand and be sensitive to other peoples' feelings, achievements, and needs while motivating them to achieve success. For effectiveness the chairperson should be innovative and be willing to delegate and experiment. He should keep a chronological log of activities and experiences so that accurate records are available.

For future work on the ongoing metric program, supplies have been ordered. These include the booklet, An Everyday Guide to the Metric System. However, the monies available at this time make additional orders remote.

A workshop is planned for March for all secretaries in the district. This will begin the work to help the non-certified personnel become familiar with metrics.

Curricular developments beyond the one semester metric course already adopted for the fall of 1977 at Danville High School will be attempted, probably in the form of short mini-courses for teachers outside the math and science areas.

A metric center will be located at Danville High School as soon as room is available.

A series of short articles will appear in the local newspaper during the spring to acquaint the community with metric ideas and give them insight into what the school is doing to meet the national goals on metrics.

These thoughts and experiences represent my feelings about the qualifications of a good administrator, and an effort to set them in motion in an actual field task. I felt the workshop represented one of the biggest single administrative undertakings of my career. A great deal of work and time was required to review supplies for selection, coordinate all personnel involved, and prepare all materials. I felt it was truly a good administrative experience.

As work proceeds it is hoped that my work will be functional and meet the needs of the situation. Certainly leadership is a most important asset for an administrator.

APPENDIX

TO: Metric Committee
FROM: Larry D. Roth
REFERENCE: Implementation of Metric System, District 118
DATE: November 13, 1975

The following special task committee is appointed to recommend and facilitate the implementation of the Illinois Office of Education policy on metrification for District #118. The Illinois Office of Education Metric Policy Statement is attached.

Committee Members: Danville High School

Gayle LeCount - Chairman
Lloyd Logan
John Barker
Esther Elmore

East Park Junior High

Sue Millikin
Barry Rowe

North Ridge Junior High

Chris Rothwell
Mary Jean Hunt
James Dean

South View Junior High

Bonnie McWilliams
Janis Paris
Karen Johnson

Elementary

Larry Roderick

OBJECTIVES:

1. Review the IOE metric policy in relation to our present curriculum with regard to measurement.
2. Recommend procedures to implement the IOE metric policy into the District 118 curriculum in all areas that involve measurement.

3. Follow all recommended procedures outlined by IOE with regard to metrification.
4. Interim report dates:

February 1, 1976
April 1, 1976
May 25, 1976
5. The committee is encouraged to expand its membership as needed, utilize consultants, develop techniques to expedite its work, and report difficulties. This will be an on-going committee until District 118 is in compliance with the IOE policy.

METRIC POLICY STATEMENT

It is the policy of the Illinois State Board of Education that the International Systems of Units (SI) shall be adopted as the official instructional system of measurement throughout all phases of public education in Illinois not later than 1980.

Beginning in fiscal year 1976, local education agencies shall begin introduction of the metric system of measurement as the primary language of measurement and the customary system as the secondary language of measurement in Grades K-6, with the metric system of measurement taught exclusively in Grades 7-12.

Furthermore, the Illinois State Board of Education shall require that adult and vocational technical education programs, whether offered by the local education agency or post secondary institutions, shall provide the opportunity for metric awareness and instruction.

The Illinois State Board of Education shall require that all text materials considered for adoption by the local education agency, which include material on measurement, identify the basic metric units and offer activities in their use. In the event that text materials were recently adopted and the metric system is not a major feature, the local education agency shall develop or acquire supplementary materials on the metric system by 1977.

TO: Junior High School Metric Committee

FROM: Gayle LeCount

REFERENCE: Preliminary Metric Implementation

DATE: November 19, 1975

1. Building chairman notify your building principal that you are working on the implementation of the metric system, that this is a District 118 effort, and that you will call upon other building personnel to help you. If he has any questions he may call Dr. Roth.
2. Read carefully the proposed model for the state implementation plan. Especially consider those items which have a January 1976 deadline. Copies of this have been sent to you by Dr. Roth.
3. Read the Illinois Office of Education (IOE) metric policy statement. This was handed out to you during the first meeting with Dr. Roth on Thursday, November 13.
4. Each building chairman should keep copies of all information sent to me. Date and file all materials.
5. Ask each department within your building (if necessary involve all building teachers) what changes they think will take place within their department when it becomes necessary to convert to metric measurements. Ask for specifics and compile one report for each department. This should include all departments along with guidance, P.E., and music. Send copies of this to me by Dec. 12.
6. Recommend procedures to implement the IOE metric policy into the District 118 curriculum in all areas that involve measurement. Keep in mind the recommended procedures outlined by IOE. Again ask each department for whatever help you need. Deadline is February 1, 1976.
7. I will continually meet with each building committee. Metric Committee meetings will take place when necessary.
8. Remember our greatest problem will be staff acceptance, so support the idea with a 100% positive outlook.

TO: D.H.S. Metric Committee
FROM: Gayle LeCount
REFERENCE: Preliminary Metric Implementation
DATE: November 19, 1975

1. Each member check to see that you have all materials that have been handed out. This should include the proposed model for the state implementation plan and the Illinois Office of Education metric policy statement.
2. Each person keep copies of all materials sent to me.
3. Read carefully the proposed model and especially consider those items which have a January 1976 deadline. Copies of this have been sent to you by Dr. Roth. Also read the IOE metric policy statement. This was handed out to you during the first meeting with Dr. Roth.
4. With regard to the following areas: Ask those departments what changes they think will take place within their department when it becomes necessary to convert to metric measurements. Ask for specifics and compile one report for each department. Send copies to me by December 12.

John Barker
Science
Math
Business
Drivers Ed.

Esther Elmore
Home Ec.
English
Social Studies
Special Ed.

Lloyd Logan
Industrial Ed.
P.E. - Health
Music
Guidance

5. Recommend procedures to implement the IOE metric policy into the District 118 curriculum in all areas that involve measurement. Keep in mind the recommended procedures outlined by IOE. Deadline is February 1, 1976. Again ask each department for whatever help you need.
6. Remember our greatest problem will be staff acceptance, so support the idea with a 100% positive outlook.

TO: Larry Roderick
FROM: Gayle LeCount
REFERENCE: Preliminary Metric Implementation
DATE: November 19, 1975

1. Would you please obtain a sampling of what the major problems have been with the elementary grades in working with the metric system this past year. Perhaps some of the other elementary principals could be included for their input. This could be divided into staff problems and student problems.
2. Keeping in mind the recommended IOE metric policy for implementing the metric system of measurements, which Dr. Roth gave us on November 13, what problems do you anticipate the junior and senior high schools having the first year?
3. At this time do you have any suggestions for changing the elementary metric program as it has been adopted, or recommend any changes which would have made more effective and efficient the procedure used in its initiation?
4. Please do call on other elementary personnel you might need and reply by December 12.

TO: Dr. Roth
FROM: Gayle LeCount
REFERENCE: Metric Committee
DATE: November 24, 1975

I talked with Ron Howard, Superintendent at Rankin, and two elementary teachers, Linda Combs and Mardel Knapp on Thursday, November 20. Both teachers are now working with the metric system and expressed an interest in helping with possible workshops that we might have in District 118. They were also at the metric workshop at Rossville on November 18. Both are in contact with Dr. Tom Edwards and Dr. Bob Cramer at I.S.U. These men are now active in metric work.

Report dates:

1. Preliminary information will be available from certified staff on implementation of the metric system by February 15. Teachers have been advised to save all incoming sample texts which contain metric materials.
2. Refinement of the implementation materials sent in on February 15, will be ready by April 1.
3. By May 25, all departments will have available lists of materials and costs which will be needed to begin school in September 1976.
4. I do need help in finding additional committee members who will provide inservice of non-instructional personnel and awareness programs for parents.

TO: Mr. Mathisen
FROM: Gayle LeCount
REFERENCE: Metric Committee
DATE: November 24, 1975

The Illinois Office of Education states that all classrooms within the state must begin the use of the metric system by September 1976. All texts now adopted can be used for the next five years, or until their adoption date runs out, but must be supplemented with metric materials by September 1977. By 1978 (this is not a definite date) all classrooms must use the metric system of measurements exclusively.

With your permission, Esther Elmore, Lloyd Logan, and John Barker will be asking the departments at D.H.S. what problems they anticipate and obtaining suggestions for implementing the metric system.

Metric Committee reporting dates to you and Dr. Roth, as set up by Dr. Roth, will be:

1. February 1976 - preliminary information on implementing the metric system.
2. April 1, 1976 - an initial cost estimate for materials needed by certified staff to begin the 1976-77 school year.
3. May 25, 1976 - final list of materials needed for September 1976.

TO: D.H.S. Department Heads
FROM: Gayle LeCount
REFERENCE: Metric Committee
DATE: November 24, 1975

It will be necessary for Esther Elmore, Lloyd Logan, or John Barker to ask for your help and the help of your department with the initial questions which must be answered with respect to the implementation of the metric system.

The metric system will be introduced into all classrooms wherever measurements are involved in the fall of 1976. By 1978 all classrooms must use the metric system exclusively. This is by direction of the Illinois Office of Education.

Please advise your departments that questions now arising must be answered accurately and in depth. Decisions made in the next few months must be lived with beginning next year.

Save all sample texts and supplementary materials on the metric system and advise all staff to do so also.

TO: District 118 Staff
FROM: Gayle LeCount
REFERENCE: Implementation of the Metric System, District 118
DATE: December 1, 1975

The Illinois Office of Education has set up definite deadlines for the introduction of the metric system into each school district in the state. In the fall of 1976 you will begin teaching metric measurements and by 1978 all measurements will be exclusively metric in every teaching area. As you can well see this is one of the biggest changes in education in recent years and your help is needed.

Under the guidance of Dr. Roth a committee has been set up to help District 118 meet this required conversion with as little difficulty as possible. Each of you and your departments will have the responsibility of suggesting to these committee members where you anticipate problems and also offer suggestions on what can be done to prepare both the staff and students for the change ahead.

With this total District 118 effort the metric system can be implemented smoothly for you have offered ideas which will help shape each of your departments and affect you directly. So do consider carefully questions which arise in the coming months. Any additional input you have will always be appreciated.

Building committee members will contact you periodically.

Thank you.

TO: Gayle LeCount
FROM: Larry E. Roderick
REFERENCE: Metric Implementation
DATE: December 1, 1975

In response to your memo of November 19, 1975, it is my feeling that major problems implementing metrics have been the following:

1. Educating the staff:

It is extremely difficult to find adequate amounts of time for inservice training for the staff. The unit leaders at the elementary level have had minimal exposure to the metric system, while most teachers are learning as they proceed through the math book. This situation may be adequate when all teachers in a building teach mathematics, but could lead to problems in departmentalized situations in that total application may not occur due to lack of knowledge.

We also experienced some difficulty in securing suitable personnel for the inservice training we did offer. Most instructors seemed "gimmick and game" oriented, rather than imparting pure metric instruction. I feel it is imperative that teachers have some knowledge of the material prior to becoming involved in the acquisition of metric equipment.

2. Student application:

We have experienced some difficulty in finding adequate applications of metric concepts once they have been taught. As new textbooks are adopted the problem may resolve itself, but until that time it will require some creativity and innovativeness by the teacher to insure adequate application.

I would foresee no other major problems in implementation at junior and senior high level than those outlined above.

Perhaps the greatest need for change in the elementary program should have been in the area of student facility with decimal notation at the intermediate level. We found students inadequately prepared to handle or grasp the use of decimals. Consequently, the presentation in the pilot program was slowed considerably. The math text we are now using introduces decimals early enough that the problem should be resolved.

I would also strongly recommend that adequate equipment be made available to teachers and staff immediately following the target date for implementation as this will be the period when there should be the greatest awareness and keenest interest in the matter. Therefore, it follows that equipment should be available and accessible to teachers in adequate supply.

Items purchased for elementary use included the following:

- a. Meter sticks.
- b. Meter tapes.
- c. Balance scales.
- d. Metric weights.
- e. Interlocking centimeter cubes.
- f. Assorted measuring containers.

If I may be of further service, please contact me.

METRIC SYSTEM
International System of Units (SI)

Measures of length - meters (39.37 inches)

(prefixes) (1 inch approx. $2\frac{1}{2}$ cm.)

(1 km. approx. $5/8$ mile)

(km) kilo meter 1000 meters - commonly used to measure distances on highways.

(hm) hecto meter 100 meters - not commonly used.

(dkm) deka meter 10 meters
1 meter

(dm) deci meter 1/10 meter

(cm) centi meter 1/100 meter

(mm) milli meter 1/1000 meter

(u) micro meter 1/1000000 meter - is called a micron. It is very small and is used to measure wavelengths.

Measures of weight - grams (30 grams approx. 1 ounce)

(All above prefixes remain the same. For example a decigram

(dg) is equal to 1/10 gram.)

Measures of volume (dry) (1 cu. inch approx. 16 cu. cm.)

cubic meter (m^3), cubic centimeter (cm^3), etc.

Measures of liquid - liters (approx. one quart)

(All above prefixes again remain the same. For example a milliliter (ml) is 1/1000 liter.)

Also: (a) 1 liter is 1 cubic decimeter (dm^3).

(b) 1 milliliter (ml) is 1 cubic centimeter (cm^3)

(c) 1 liter of water weighs 1 kilogram (kg).

Measures of area - square meters (m^2), etc.

Land is measured in hectares (ha) and one (ha) is about $2\frac{1}{2}$ acres.

Measures of temperature - centigrade rather than fahrenheit.

212 F is 100 C

98.6 F is 37 C

32 F is 0 C

-40 F is -40 C

Time remains the same - seconds, hours, etc.

TO: District 118 Staff
FROM: Gayle LeCount
REFERENCE: Metric Implementation
DATE: December 11, 1975

There are a very large number of conversion constants which are used in changing from the English system to the metric system, or back. Obviously it would be impossible for you to learn all of these. Therefore when the metric system is introduced all measurements can be done in either metric or English and it will not be necessary to convert from one system to the other. At first you might want to convert some just to help you visualize the amount you are talking about, but as the metric system becomes more familiar the less converting you will do until finally you probably won't convert at all. A car speedometer marked in km/hr and road signs also marked in km/hr would allow you to travel without the need to know how many miles/hr you are actually going. After a few weeks of driving you could easily estimate what 80 km/hr means with regards to movement of your car without converting it back to miles/hr.

Approximate conversions you might want to refer to:

1 inch	25 mm	1 m	3.3 feet
1 foot	.3 m	1 m	1.1 yard
1 yard	.9 m	1 kg	2.2 pounds
1 mile	1.6 km	1 km	.6 miles
1 quart	1 liter	1 metric ton	1000 kg
1 pound	.45 kg	A nickel weighs	5 grams
1 mm	.04 inches	a bicycle weighs	14 kg

TO: Gayle LeCount
FROM: Junior High Metric Committee Members
REFERENCE: Ways in which each department will be affected
by the implementation of the metric system into
the district.
DATE: December 11, 1975

English - new vocabulary words
- no supplies necessary

Social Studies - new maps needed

Science - metric already in use
- no supplies necessary

Math - metric already in use

Home Economics - new books
- measuring cups and spoons
- tape measures
- all cooking and sewing needs

Industrial Arts - books
- rulers and meter sticks
- machine gauges

Business Training - books are not metric, but deal mostly
with money.

Spanish and French - new maps

Special Education - all basics as there are no metrics in
special education at present.

Art - rulers and metric sticks
- measuring cups

Health - no change

Music - no change

P. E. - tape measures
- meter sticks
- either new facilities will be needed if present dimensions are altered, or all present dimensions will need to be converted to metric.

Nurse - heights, weights, and temperature will all be computed differently and will need new equipment.

Cooks - all new measuring cups, spoons, etc.

Custodians - meter sticks, tools, etc.

All staff members seem to feel very inadequate in their knowledge of the metric system, but seem to feel fairly eager to learn.

Substitutes would like to be included in the in-service training.

Almost all teachers suggested that a chart covering important metric information would be very helpful in all rooms.

TO: Gayle LeCount
FROM: Sue Millikin, East Park
REFERENCE: Metric Workshop
DATE: December 5, 1975

The staff at East Park, with the exception of six teachers, do not feel competent enough to teach the metric system beginning next year without first attending some sort of workshop that will familiarize them with all aspects of this system.

We feel the workshop should include at least the following areas: linear measures, volume, weight, temperature, and area. It is not necessary to provide conversion charts, but several basic approximations would be useful, for example, a meter's length being approximately one yard.

A chart should be set up and distributed to explain prefixes used on the basic units showing both multiples and submultiples. Uses of the system in each subject should be discussed; perhaps by breaking the workshop down into individual subject areas. Advantages, disadvantages, and uses of the metric system should be included.

Stress should be placed on the importance of a child being able to work comfortably with decimals in addition, subtraction, multiplication, and division.

Several of the teachers who have experience in teaching the metric system could provide a list of some of the best techniques they have found useful and those that have failed.

We feel the time needed for a workshop of this type would be during the early fall of 1976.

LET'S DO IT THE EASY WAY

Most of us probably aren't familiar with many of the necessary constants needed to change from one English unit to another.

(a) 1 gallon	231 cu. in.	(d) 8 qts.	1 peck	(g) 1 cu. ft.
(b) 1 bushel	1½ cu. ft.	(e) 1 barrel	105 qt.	is
(c) 1 cu. ft.	62½ lbs.	(f) 1 pint	16 oz.	1728 cu. in.

Of course once we begin use of the metric system we really won't have to worry so much about the above conversion constants and all the other hundreds not listed. The metric system requires only the movement of a decimal point when changing from one length to another or any other change within a given category of measure such as length, area, or volume, and thus it is far easier.

To change from miles to yards would require the knowledge of the factor 1760. And of course all other English changes requires knowing a specific constant to make the conversions. This of course is the hard way to handle conversions so why not do it the easy way. That easy way would be the metric system which employs multiples of 10 and thus a decimal movement handles either division or multiplication of these multiples. For example 1.853 m is 18.53 dm is 185.3 cm is 1853 mm. Also the metric system allows for only one basic unit for each category of measure (length, area, volume, etc.) rather than many units of each. In the U.S. we may have length in inches, feet, yards, rods, or miles, but in the metric system length would only be in meters or parts of a meter.

Already we accept many metric measurements. Prescriptions are written in metric, photographic equipment is in metric (16 mm projector), and we use olympic swimming pools. Levi clothes are now available in metric, coke has ml cups, and Chevette is the first all metric American car. Science has also used the metric system for years.

- 1866 - metric system made lawful in the U.S.
- 1875 - metric standards of length determined and a treaty signed by 17 nations in Paris including the U.S.
- 1960 - SI of metrics adopted for international use.
- December 23, 1975 - President Ford signed into public law legislation for voluntary adoption of the metric system.

TO: Metric Committee
FROM: Gayle LeCount
REFERENCE: February 7 Report and Spring Timetable
DATE: January 13, 1976

1. By February 7, you should have available information by department on:
 - a. areas where supplementary materials will be needed for the fall.
 - b. departments which can adopt new texts.
 - c. any ideas as to how the metric system can be implemented into each department. This should include any suggestions beyond supplementary materials. For example, audio visual efforts or departmental workshops.
2. Refer to the curriculum guides for ideas but do not, at this time, make any changes in the present guides. This will be done throughout the coming school year.
3. I already have a list from you as to suspected problem areas of the implementation, so do not rewrite those.
4. In February there will be a committee meeting to plan for possible spring workshops. These can realistically only be short and should be carried out within each building separately. In the next few weeks begin thinking about how and when these workshops can be carried out for the best possible positive results.
5. By April 1, have a preliminary list of materials, and cost estimates, needed to begin the fall of 1976. New catalogs coming in now have many metric items.
6. Depending on budget available, these lists will be expanded or cutback, and a final list will be made up by May 25.
7. Think of ways to help the staff in your building begin thinking metric. For example, each teacher's lounge could have the coffee container marked in liters or milliliters, and a scales could be placed so everyone could weigh themselves in kilograms.

HELPFUL HINTS IN WRITING METRIC NOTATION

1. Commas must not be used as thousand markers, because the comma is used in some countries as a decimal point.
2. No periods are put after symbols except at the end of a sentence, and none between them.
mm not m., and not m.m.
3. Symbols are the same in singular as in the plural except for ton and liter, which become tons and liters.
mm not mms
4. When typing do not hyphenate the prefix.
millimeter not milli-meter
5. Multiplying prefixes are immediately adjacent to the unit symbols with which they are associated.
km mm dm kg
6. As a general rule, symbols are in small letters. All prefixes should be written with a small letter except when they begin a sentence.
km not Km
7. For quantities less than one you really should place a zero in front of the decimal.
0.85 mm and not .85 mm
8. Only one unit of any particular measurement should be used at a time.
8.35 m or 8350 mm but not 8 m 350 mm
9. Numbers of five figures or more, not broken by a decimal point, are always grouped in threes with a space between the groups.
575 091.5 dm 0.829 017 m

Since we are all aware that the metric system is really upon us, and that next fall marks the beginning of a new era for most of us, it might be very helpful to look around for short courses that teach the metric system. A metric course can be offered to you here in Danville by Illinois State University if at least 15 people will sign up and attend. It is only 5 weeks long and would begin on February 16, and count one hour credit. Call 442-3700 if you are interested. This is a great chance.

WHY METRIC?

Reasons to use the metric system rather than the English:

1. Easier to use, teach, and learn.
2. A simple, precise universal system of measures.
3. Based on 10, similar to our decimal number system as well as our monetary system.
4. Represented by notation that is systematic.
5. Logical.
6. Requires fewer and simpler units.
7. Requires about 1/5 as much arithmetic as the English system when computing.
8. Makes it easier to compare items when shopping.
9. Needed to simplify procurement procedures for our world wide defense system and increase ease of communications.

A reason which is probably not quite so well known is that the metric system has become necessary in the U.S. for our economic survival. We still like to believe that we control all world trade as we once did 25 years ago.

In 1950 81% of all autos built in the world were built in the U.S. By 1970 that figure was only 31% and we continue to decline. In 1950 the U.S. was first in production of machine tools. We are now fourth. In 1950 we produced more than half of all the steel in the world. We now produce less than 20%. With 98% of all countries using the metric system and the fact that the European Common Market will require all imports to be made with only metric specifications by 1978, should make us realize we need the change.

All nations should work with the same units to satisfy a worldwide demand for standard production and parts to expedite manufacture of new items and repairs.

TO: Dr. Roth
FROM: Gayle LeCount
REFERENCE: Progress of the Metric Committee
DATE: February 16, 1976

Accomplishments for metric implementation at this time:

1. A committee has been formed and each member is aware of his responsibilities and the IOE guidelines.
2. Channels of communication have been set up and each member has been asked to make references with a positive outlook on metrics in order that staff acceptance will be as favorable as possible.
3. Each building has been divided so that each committee member will be responsible for a definite group or department so that efforts neither overlap or fail to contact everyone.
4. Each junior high and senior high teacher has completed a questionnaire with regards to the following:
 - a. Anticipated changes that will be necessary within each department when it becomes necessary to convert to metric measurements.
 - b. Competency on metric understanding.
 - c. Recommendations for procedures to implement the IOE metric system into the District 118 curriculum.
 - d. Development of teacher workshops.
 - e. Problem areas.
 - f. Areas where supplementary materials will be needed.
5. Handouts have been given to all teachers on prefixes and reasons why the U.S. is changing to metrics.
6. Teachers have been made aware of courses offered from universities that they might take.
7. Replacement of texts, measuring utensils, and supplementary materials have been discussed.
8. Conversion charts and other useful teaching techniques have been passed out to all secondary staff.
9. Teacher acceptance, availability of materials and money, and inservice workshops for non-certified personnel and substitutes have been discussed by the committee.

10. Larry Roderick has sent a report on major problems the elementary teachers have had in working with the metric system this past year, and changes which might take place in the elementary program as it was adopted.
11. A need has been established for adequate time and properly trained personnel to carry on inservice training.
12. Teachers are aware that sample texts and supplementary materials coming in should be saved.
13. All D.H.S. department heads were notified of efforts for metric conversion on November 25.
14. Materials have been sent to all junior and senior high teachers. This includes:
 - a. IOE policy.
 - b. What the metric system is about and what prefixes mean.
 - c. Conversions and their use.
 - d. Reasons why the metric system is much easier.
 - e. Hints in writing metric notation.
 - f. Why metric.
15. Mr. Shebby was asked to write to the state level for their anticipation of foreseeable changes in sports. On December 10, a letter from James P. Flynn, Assistant Executive Secretary of IHSA answered that there are no plans at this time for any additional sports to go metric. The National Federation of State High School Associations will be the pacesetter when the time comes.
16. On December 2, Lloyd Logan was asked to write to different industries for their help. No positive response has been received to this date.
17. On January 15, I met with Bernice Courtney from the Commercial News and gave her several items of information which she later used in the paper.
18. On February 3, each committee member was given one or two addresses to write to for materials that might be useful in a workshop for teachers who are just beginning the use of metric measurements. (List enclosed.) During the meeting it was decided that a decision about a spring workshop would be referred to Dr. Roth on February 24, after a 3:30 P.M. meeting that day. That should allow enough time for each member to receive responses.

19. I attended a conference on January 7, at Chicago O'Hare, given by Diener and Associates of Research Park, North Carolina.

Metric Committee efforts coming up:

1. I will attend a conference at Eastern Illinois University on February 20, for metric leaders of the area.
2. By April 1, a preliminary estimate of materials needed to begin school in the fall will be available.
3. By May, a final list and cost of materials needed for fall, depending on money available, will be sent to Dr. Roth.
4. April would be a good time for a metric awareness month. Each lounge will have a metric calendar, scales and other measuring devices, and teachers should have displays, posters, class discussions, and some lesson plan in their rooms to help bring about metric thinking. Also most junior and senior high teachers will receive a converter folder.
5. For the fall of 1975:
 - a. A site for a metric center should be chosen.
 - b. Inservice of non-instructional personnel begun.
 - c. Workshops set up.
 - d. Use of the Commercial News for metric announcements.
 - e. Continuation of newsnotes on metric areas.

Addresses where committee members are to write for ideas.

Esther Elmore	- John F. Eckley, Science Research Ass., 1513 Rutledge Drive, Lincoln, Illinois 62555 Eye Gate, 146-01 Archer Avenue, Jamaica, New York 11435
John Barker	- McGraw-Hill Films Inc., 1221 Avenue of the Americas, New York, New York 10020 American National Metric Council, 1625 Massachusetts Avenue, N.W. Washington D. C. 20036
Lloyd Logan	- Local Industries
Karen Johnson	- Graphic Films Corp., 3341 Cahuenga Blvd., Hollywood, California 90058
James Dean	- Metrication Institute of America, 1825 Willow Road, Northfield, Illinois 60093
Sue Millikin	- Diener and Associates, Inc., Box 12052 Research Park, North Carolina 27709
Chris Rothwell	- Empire Metrics, Valatie, New York 12184 - National Bureau of Standards, Metric Information Office, U.S. Dept. of Commerce, Washington D.C. 20234
Janis Faris	- American Education Week, Box 327, Hyatts- ville, Maryland 20781 - Dr. David Dye, Math Coordinator, 6th floor Capitol, SG Bldg., St. Paul, Minnesota 55101
Barry Rowe	- Dr. Bob Cramer, Edwards Hall, ISU, Normal, Illinois 61761
Bonnie McWilliams	- Swan Publishing Co., Box 248, Roscoe, Illinois 61073
Mary Jean Hunt	- Pepsi Cola and International Harvester. Addresses obtained locally.

MEMO

February 25, 1976

TO: Gayle LeCount

FROM: Larry D. Roth

Gayle, in reviewing your progress report on the Metric Committee, I was very pleased with the progress and the way you have organized your committee. I passed this memorandum on to Dr. Woods, who relayed it to the Board of Education. You may convey this to your committee.

If I may be of help to you, please let me know. I think you are doing an outstanding job.

er

METRICS

For clarification 1 degree celsius equals 1 degree centigrade. Since centigrade could either mean 1/100 th. of a 90 degree angle, or have reference to temperature, it is not used where any confusion might arise. However, it is quite correct to say the temperature is 25 degrees centigrade.

Much has been written as to whether you spell the standard unit for length meter or metre. The spelling in most countries is metre, but the National Bureau of Standards has decided on meter for the U.S.

When fall begins students will naturally ask questions about metrics and we should be concerned that answers given are clear and correct. As teachers it would become rather embarrassing if we didn't know answers to metric questions that involve common place terms. There are really only ten new words that have to be learned in order that you can successfully use the metric system. We have seen these in previous handouts.

Be prepared to answer questions such as these:

1. What does mille, centi, and deci mean?
2. How do you change from one unit to another in metrics?
3. How many prefixes do we need for most everyday work?
4. What are the basic units for length, volume, and mass?

If you aren't sure, ask the Metric Committee Member in your building.

TO: Dr. Roth

FROM: Gayle LeCount

REFERENCE: The Metric Committee

DATE: April 12, 1976

Accomplishments for metric implementation:

1. A Metric Committee meeting was held on February 24. A decision was made not to have a workshop this spring, but rather show metric films to all staff on a voluntary basis, and continue handouts on metric topics.
2. All committee members are to send lists of available films to me from the addresses to which they have written. Refer to the last page of the February report.
3. On February 27, the Metric Reporter was ordered along with metrication masters for the junior highs. A free film from SRA and a \$10 rental film from McGraw-Hill were also ordered.
4. I talked with Bob Hoskinson about a one-half day metric workshop for fall. He told me to notify the DEA committee. I wrote to Jessica Boyd, DEA president, on March 4, requesting a one-half day fall workshop.
5. On March 4, a handout was sent to all secondary teachers on clarification of the metric terms meter and centigrade.
6. While visiting Lansing, Flint, Evanston, New Trier, Rich East, and Westmont in early March, I obtained names of those people involved in metrics and wrote each school asking for any metric information they might have. However, no responses have been received.
7. On March 13, a handout was sent to all teachers on metrics in everyday life.
8. On March 17, John Barker of D.H.S., distributed U.S. Army posters to all department heads for their departments. Almost 200 posters were received and distributed. Most teachers now have metric posters in their rooms.
9. A metric film was shown at each junior high and the high school from March 30 to April 2.
10. April, metric awareness month. The following activities will be conducted:
 - a. A metric showcase at D.H.S. and South View.
 - b. Lounges will receive a metric scales and other measuring devices.
 - c. Teachers will have room displays or lessons on metrics.

- d. Conversion folders to all secondary staff.
 - e. Quizzes will be given to all teachers on a voluntary basis.
 - f. Committee members will meet with all departments.
 - g. Metric orders will be checked for fall.
11. On April 7, a handout was given to all secondary teachers on household weights and measures.
12. Due to the fact that the junior highs and D.H.S. have not yet finished their spring requisitions, the original idea of sending a list of metric orders to you by April has been changed. When orders are now completed Mr. Logan will check over all industrial arts supplies and all other metric materials ordered will have a copy sent to me. A check will be made to see that no items are ordered where money is misused.
13. Coming up:
- a. A list of films for fall use.
 - b. A list of ideas for a fall workshop.

METRIC TABLES

LENGTH

1 millimeter	.001 meter	1000 millimeters	1 meter
1 centimeter	.01 meter	100 centimeters	1 meter
1 decimeter	.1 meter	10 decimeters	1 meter
1 dekameter	10 meters	.1 dekameter	1 meter
1 hectometer	100 meters	.01 hectometer	1 meter
1 kilometer	1000 meters	.001 kilometer	1 meter

CAPACITY

1 milliliter	.001 liter	1000 milliliters	1 liter
1 centiliter	.01 liter	100 centiliters	1 liter
1 deciliter	.1 liter	10 deciliters	1 liter
1 dekaliter	10 liters	.1 dekaliter	1 liter
1 hectoliter	100 liters	.01 hectoliters	1 liter
1 kiloliter	1000 liters	.001 kiloliters	1 liter

MASS AND WEIGHT

1 milligram	.001 gram	1000 milligrams	1 gram
1 centigram	.01 gram	100 centigrams	1 gram
1 decigram	.1 gram	10 decigrams	1 gram
1 dekagram	10 grams	.1 dekagram	1 gram
1 hectogram	100 grams	.01 hectogram	1 gram
1 kilogram	1000 grams	.001 kilogram	1 gram

AREA

1 sq mm	.000001 sq m
1 sq cm	.0001 sq m
1 sq dm	.01 sq m
1 sq dam	100 sq m
1 sq hm	10000 sq m
1 sq km	1000000 sq m

VOLUME

1 cu mm	.000000001 cu m
1 cu cm	.000001 cu m
1 cu dm	.001 cu m
1 cu dam	1000 cu m
1 cu hm	1000000 cu m
1 cu km	1000000000 cu m

METRIC QUIZ #1

1. The metric system is based on units of _____.
2. Water boils at _____.
3. Water freezes at _____.
4. A comfortable room temperature would be _____.
5. To tell time in metrics you use _____.
6. The distance to California is measured in _____.
7. How many cm in a m? _____
8. How many m in a km? _____
9. 6 cm 8 m should be expressed as _____ cm or _____ m.
10. 3.4 cm can be expressed as _____ mm or _____ m.

Answers to the above questions were given out with quiz #2.

1. 10
2. 100
3. 0
4. 24 degrees centigrade
5. hours, minutes, seconds
6. kilometers
7. 100
8. 1000
9. 806 cm or 8.06 m
10. 34 mm or .34 m

METRIC QUIZ #2

1. The average height of a basketball player is
 - a. 3 cm
 - b. 2 m
 - c. 1 dm
2. The waist measurement of a stewardess is
 - a. 65 cm
 - b. 65 mm
 - c. 67 m
3. The chest of a weight lifter is
 - a. 110 dm
 - b. 120 m
 - c. 115 cm
4. Normal body temperature is
 - a. 100 C
 - b. 37 C
 - c. 56.5 C
5. The length of a football field is
 - a. .9 dm
 - b. 90 m
 - c. 900 cm
6. An air conditioner is set to maintain
 - a. 22 C
 - b. 52 C
 - c. 70 C
7. The weight of a man is
 - a. 75 kg
 - b. 325 kg
 - c. 175 kg
8. A cake is baked at a temperature of
 - a. 17 C
 - b. 177 C
 - c. 350 C
9. The volume of an automobile gas tank is
 - a. 20 cm³
 - b. 15 ml
 - c. 80 l
10. The length of a dollar bill is
 - a. 15.7 cm
 - b. 14.6 mm
 - c. 13.9 m

The answers are: B, A, C, B, B, A, A, B, C, A

METRIC QUIZ #3

1. What metric unit will be used in place of the following?
 - a. inch _____
 - b. quart _____
 - c. mile _____
 - d. ounce _____
 - e. teaspoon _____
 - f. pound _____
2. Place the decimal point so that the following are reasonable.
 - a. Jim is 1545 centimeters tall.
 - b. Mary's new baby brother weighs 350 kilograms.
 - c. A small pop bottle holds 32000 milliliters.
 - d. We put 7800 liters of gasoline in the car.
3. List the following in order from smallest to largest.

hectometer (hm)	centimeter (cm)	decimeter (dm)
millimeter (mm)	decameter (dkm)	kilometer (km)

Answers to the above quiz were given out at the same time the quiz was given.

1. a. centimeter b. liter c. kilometer d. gram
e. milliliter f. kilogram
2. a. 154.5 b. 3.50 c. 320.00 d. 78.00
3. millimeter, centimeter, decimeter, decameter, hectometer, kilometer

TO: Gayle LeCount
FROM: Larry D. Roth
REFERENCE: Metric Committee
DATE: May 28, 1976

Gayle, I would like for you to give an update on the Metric Committee's accomplishments and ideas for the 1976-77 school year at the Board of Education's August action meeting, August 18. This would be the mini curriculum report for the month of August.

I will send a reminder in August concerning this matter.

er

TO: Gayle LeCount
FROM: Larry D. Roth
REFERENCE: August Board Meeting
DATE: August 19, 1976

Thank you very much for your excellent presentation of the Metric Committee's work during the past school year. I look forward to working with you and the committee again this year, as we continue to implement the metric program into District 118.

Thank you very much.

LDR:wə

cc: Don Woods
Arthur Mathisen

OCTOBER 27, 1976 METRIC WORKSHOP

After the meeting in room 127 teachers will go to the following groups:

Mr. Logan 1E Bldg.	Mr Barker 110	Mr. Federmeier 107
Mr. Pascal	Mrs. Bogart	Mr. Crawford
Mr. Dowers	Mr. D. Miller	Mrs. Larsen
Mr. Grygil	Mrs. L. Smith	Mr. Jay Woodard
Mr. John Woodard	Mr. Hurst	Mrs. Dickson
Mr. Linne	Mr. Looft	Mr. Kay
Mr. Pendleton	Mr. Luzenske	Miss Young
Mr. Oliver	Mr. DePauw	Mr. Millikin
Mr. O'Neil	Mrs. Fairchild	Mr. Carlson
Mr. Seibert	Mr. Brooks	Mrs. Lacquet
Mr. Dugle	Mrs. Isringhausen	Mr. Bair
Mr. Grant	Mrs. Rich	Mr. Nelson
Mr. Rimington	Mr. Buerkle	Mrs. C. Smith
Mr. Robertson	Mr. Eakle	Mr. A. Crawford
Mr. C. Smith	Mr. Menkhaus	Mr. Fogleman
Mr. Hayward 103	Miss Appenheimer 322	Miss Norem 323
Mr. Dobbles	Mr. Dougherty	Mrs. Brown
Mrs Moehnke	Miss Ferrell	Mr. Ferrell
Mrs. Baldwin	Mrs Holbrook	Mrs. Meyer
Mr. Frick	Mrs. Sanders	Mrs. Sanders
Mr. Green	Mrs. Yount	Miss Parish
Mrs. Krabbe	Mr. Roth	Miss Brown
Mr. Riegle	Mrs. Tunnell	Mr. Birky
Mr. Schlidt	Mr. Swenson	Mr. Gloss
Mrs. Flierman	Miss Flach	Mrs. Elmore
Mrs. Morris	Mrs. Harper	Miss Brasel
Mr. Lacquet	Mrs. Reynolds	Mrs. Denney
Mr. Stark	Mrs. LaMar	Mrs. Metzen
Mr. Wm. Miller	Mrs. Culp	Mrs. Harvey
Mr. Ward	Mrs. Fogleman	Mr. Lewis
Mr. Redenbaugh		

METRICS

T or F

1. Another name for 100 meters is 1 hectometer.
2. A milligram is larger than a centigram.
3. A meter is longer than a yard.
4. One cubic centimeter holds the same amount as one liter.
5. "Centi" means .01.
6. One milliliter is equal to one cubic centimeter.
7. A person who weighs 54 kilograms is heavier than a person who weighs 54 pounds.
8. If the temperature in this room is 30 C, we should put our coats on to keep warm.
9. The meter is the basic unit of weight in the metrics.
10. One kilogram is equal to 100 grams.

Multiple Choice

1. If you were to measure the amount of orange juice in a pitcher, you would use
 - a. milligrams
 - b. liters
 - c. meters
 - d. kiloliters
2. If you were to measure the length of a garden hose, you would measure it in
 - a. meters
 - b. kilometers
 - c. grams
 - d. kilograms
3. If you were to weigh yourself, you would weigh in
 - a. kilometers
 - b. kiloliters
 - c. kilograms
 - d. grams
4. The distance between cities is measured in
 - a. kiloliters
 - b. kilometers
 - c. centimeters
5. To measure a pencil you would use
 - a. hectometers
 - b. millimeters
 - c. centimeters

6. The temperature of your body in metric is
 - a. 37 C b. 98.6 C c. 98.6 F d. 37 F
7. If you measured the height of a friend, you would use
 - a. kilometers b. millimeters c. centimeters d. meters
8. To measure the volume of milk in a glass, you would use
 - a. milliliters b. centigrams c. kiloliters d. liters
9. In a few years, fabric will be measured in
 - a. millimeters b. meters c. kilometers d. decimeters
10. Instead of using cups when you cook, you will use
 - a. milligrams b. milliliters c. grams d. centigrams

Likely or unlikely

1. A basketball player is 3 meters tall.
2. A bicycle travels 20 kilometers per hour.
3. He drank a liter of coke in one gulp.
4. The temperature dropped to 25 C and it snowed.
5. The football player weighed 120 kilograms.
6. A pencil weighs 100 grams.
7. His foot is 5 decimeters long.
8. You can purchase 250 milliliters of coke for 15 cents.

Guess in metric units

1. Your weight.
2. Your height.
3. The distance from Danville to Champaign
4. The length of room 127
5. The size of the gasoline tank on the average car

Fill in

- | | | |
|-----------------------|-------|-------------|
| 1. 415.23 decimeters | _____ | centimeters |
| 2. .986 kilograms | _____ | decigrams |
| 3. 1.876 liters | _____ | milliliters |
| 4. 219.6 dekameters | _____ | hectometers |
| 5. 3456.1 millimeters | _____ | decimeters |

METRICS

Unit of Measure	Metric System	Customary System
Length:	millimeter centimeter meter kilometer	inch foot yard mile
Weight:	gram kilogram metric ton	ounce pound ton
Volume:	milliliter liter	ounce cup pint quart gallon
Time:	second minute hour day	second minute hour day
Temperature:	degree Celsius	degree Fahrenheit
Speed:	kilometer per hour	mile per hour
Pressure:	pascal kilopascal	inch of mercury lb. per sq. inch

METRICS

LENGTH

Metric		Customary	
1000 millimeters	1 meter	12 inches	1 foot
100 centimeters	1 meter	3 feet	1 yard
1000 meters	1 kilometer	36 inches	1 yard
		5280 feet	1 mile

WEIGHT

Metric		Customary	
1000 grams	1 kilogram	438 grains	1 ounce
1000 kilograms	1 metric ton	16 ounces	1 pound
		2000 pounds	1 short ton

VOLUME

Metric		Customary	
1000 milliliters	1 liter	2 cups	1 pint
250 milliliters	1 metric cup	2 pints	1 quart
		4 quarts	1 gallon
		8 pints	1 gallon

METRICS

1. The basic unit of measure for length is _____.
2. The basic unit of measure for liquid volume is _____.
3. The length of a football field is _____ hectometer.
4. If water is just freezing it is _____ degrees C.
5.

<u>348</u> mm	<u> </u> dm
<u> </u> mm	<u>3.65</u> m
<u>16832.1</u> cm	<u> </u> km
<u> </u> cm	<u>37</u> dm
<u>1.582</u> km	<u> </u> m
<u> </u> km	<u>30</u> dm
<u>10</u> dm	<u> </u> m
6. The distance from Danville to Westville is approximately _____ km.
7. If you were to measure the amount of water in a glass you would use _____ (metric unit of measure).
8. Most people weigh less than 125 kg.
9. The diameter of your hat band is approximately _____ cm.
10. Next year you will buy gasoline in _____.

TO: Mr. Mathisen, Principal of D.H.S.
FROM: Gayle LeCount
REFERENCE: October 27, 1976 Metric Workshop
DATE: October 28, 1976

I would like to take this opportunity to thank all of the following people for their help in making the metric workshop a success.

All of their contributions were necessary to make the day productive for the entire Danville High School staff.

Each person was very cooperative and showed initiative in setting up room displays.

Amanda Appenheimer
Nancy Norem
John Barker
Clifford Federmeier
Joe Hayward

TO: Mr. Robert Hoskinson, Director of Staff Development
FROM: Carol Spencer, Asst. Principal, East Park
REFERENCE: October 27, Inservice Workshop
DATE: November 15, 1976

The teachers at East Park have instructed me to express to you their comments on the metric workshop held at East Park on October 27.

They felt that the workshop was both informational and well presented. The films gave a clear, concise picture of the basic metric system. The administering of a pre-test and post-test demonstrated very effectively how this technique can be of benefit to students.

In general we feel that much credit goes to Gayle LeCount of Danville High School, and our own math staff under the direction of Mrs. Jackie Lewis, for an exceptionally good program.

cc: Dr. Larry Roth
Mr. Art Mathisen
Mrs. Jackie Lewis
Mr. Gayle LeCount

TO: Gayle LeCount
FROM: Larry Roth
REFERENCE: Metric Workshop
DATE: November 29, 1976

Gayle, I've had several remarks from participants in the Metric Workshop that you organized and carried off in an outstanding manner. I certainly appreciate the efforts and work that you put into this task. The work that you have done to date in helping District 118 meet the state guidelines for phasing in the metric system is exemplary.

LDR:we

cc: Don Woods
Dan Mash
Art Mathisen